

CRABS OF THE FAMILY HOMOLODROMIIDAE  
(CRUSTACEA: DECAPODA: BRACHYURA),  
V. *DICRANODROMIA SPINOSA*, A NEW SPECIES  
FROM THE WESTERN ATLANTIC

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*Abstract.*—A new species of the primitive homolodromiid crab genus *Dicranodromia*, *D. spinosa*, is described from among the specimens examined by M. J. Rathbun (1937) and previously considered to belong to the species *D. ovata* A. Milne Edwards. The new species is represented by 10 known specimens, one of which was formerly a paratype of *D. ovata* A. Milne Edwards, all collected in the western Atlantic. The species is easily distinguished from the other two American species, *D. ovata* and *D. felderi*, by the overall size, by the spination and setation of the carapace and pereopods, and by the relative lengths of the terminal segments of pereopod 5.

At the time of publication of M. J. Rathbun's fourth and final volume on the crabs of America (Rathbun 1937), the genus *Dicranodromia* A. Milne Edwards, 1880, contained four species: *D. ovata* A. Milne Edwards, *D. mahieuxii* A. Milne Edwards, *D. doederleini* Ortmann, and *D. baffini* (Alcock & Anderson). Only one of these species was known from the Americas: *Dicranodromia ovata* A. Milne Edwards, 1880, the type species of the genus. The total number of specimens of *D. ovata* known to Rathbun, including the four specimens that comprised the type series (see Martin 1990), apparently was 14. In my description of a second American species of *Dicranodromia* from the western Atlantic, *D. felderi*, I noted that several lots among those labeled *D. ovata* in the collections of the National Museum of Natural History appear to contain unrecognized species (Martin 1990). One of those species, curiously one that is represented by most of the specimens examined and discussed by Rathbun, is described herein.

Specimens upon which this report is based are in the holdings of the National Museum of Natural History, Smithsonian Institu-

tion, Washington, D.C. (USNM), and were previously labeled *Dicranodromia ovata*. Type material of *D. ovata* was borrowed from the Museum of Comparative Zoology, Harvard University (MCZ) (the holotype female, MCZ 6510, and two female paratypes, MCZ 6511 [herein reassigned to the new species] and MCZ 2745), and the Muséum national d'Histoire naturelle, Paris (the third female paratype, MNHN MP-B24324). Illustrations were made with the aid of a Wild M5APO dissecting stereoscope and drawing arm. The abbreviation CL indicates carapace length.

*Dicranodromia spinosa*, new species  
Figs. 1, 2

*Dicranodromia ovata*.—Milne Edwards and Bouvier, 1902 (in part) [see discussion].

*Dicranodromia ovata*.—Rathbun 1937:60, fig. 15, table 16 (in part only), and plate 13, figs. 3, 4. Not *Dicranodromia ovata* A. Milne Edwards, 1880.

*Male holotype*.—USNM 68887, male, CL (carapace length) = 6.1 mm. State University of Iowa Biological Expedition to Florida Keys and the West Indies, Station 63.

Handwritten labels state "26767" and "abd. drawn" [abdomen drawn; the telson of this specimen was figured on p. 61 of Rathbun 1937].

*Type locality*.—There are no additional data in the vial containing USNM 68887. However, in Rathbun's (1937) table of material of *D. ovata* (p. 64), there is only one male listed as being from the State University of Iowa collections, and the station number given in the table is 63, which corresponds to the label in USNM 68887. Therefore, the type locality, from Rathbun's table 16, is "Off American Shoal Light [Florida, U.S.A.], N. by E.  $\frac{1}{2}$  E. about 8 mi.," from a depth of 85–95 fm (156–174 m), 29 Jun 1893, from "under simple ascidian" (Rathbun 1937:64).

*Designated paratypes*.—USNM 57068, female, CL = 6.9 mm, clearly mature (but not ovigerous), State University of Iowa Biological Expedition to Florida Keys and the West Indies, Station 35, 21 Jun 1893, 5 mi N.N.W. Sand Key Light, 90 fm (165 m), off Key West, Florida. USNM 68914, female (not ovigerous, as indicated on label and in table 16 of Rathbun 1937, so possibly eggs lost at some time in past), CL = 7.1 mm, State University of Iowa Expedition, Station 64, off American Shoal Light, N. by W. about 8 mi, "about 110 fathoms" (201 m), 29 Jun 1893. USNM 57069, female (ovigerous), CL = 9.2 mm [9.8 mm according to Rathbun 1937:61], State University of Iowa, Station 52, American Shoal Light, 10 mi. N by W  $\frac{1}{2}$  W., 105 to 110 fm (192–201 m), 27 Jun 1893. This specimen photographed as *D. ovata* in Rathbun (1937, pl. 13, figs. 3, 4).

*Additional material* (not paratype).—USNM 68917, female (damaged), ovigerous, CL = 7.8 mm [label states "2 females (1 ovig)" but only 1 crab, an ovigerous female, found]. USNM 68862, 2 females, CL = 5.4 mm (juvenile); CL = 10.1 mm (mature female). USNM 68917, female (damaged), CL = 7.8 mm. USNM 68877, female (ovigerous), CL = 9.8 mm. MCZ 6511, small

mature female, CL = 6.5 mm. Florida, off Key West, 24°15'00"N, 82°13'00"W, 152–229 fm (278–419 m), 1877–1878, "Blake" Station 5. According to Rathbun (1937, 64: table 16) this is a figured paratype of *D. ovata*, although not figured by her. This specimen is herein reassigned to *Dicranodromia spinosa*.

*Diagnosis*.—Small species, known specimens not exceeding 10.1 mm total carapace length (including rostral horns). Carapace covered with small spinules interspersed with simple, short setae; spinules often longer and sharper along anterolateral borders. Rostral horns broad, blunt, with spinules dorsally and occasionally extending ventrally (not visible in dorsal view). Postorbital tooth small, usually compound. Chelipeds and pereopods 2 and 3 covered with minute spinules and long, plumose setae. Propodus of pereopod 5 extremely short, less than twice length of dactylus.

*Description*.—Carapace (Fig. 1A–C) inflated, strongly convex in cross section and less so from front to back; covered with small blunt-tip spines, among which are short, simple, amber-colored setae. Rostral teeth broad and spinose dorsally; some specimens with spines extending ventrally from midpoint between rostral teeth. Carapace spines becoming slightly smaller posteriorly, and more or less absent in broad region just posterior to cervical groove, presumably because fourth and fifth pereopods contact carapace here. Postorbital tooth small, extending laterally to just beyond cornea, and usually bifid or compound (Fig. 1C). Region between rostral horns slightly depressed. Eyes large relative to carapace; eyestalk with several blunt spines on frontodorsal surface. Third maxillipeds with numerous spines, especially on external surface of merus. Chelipeds (Fig. 2A) covered with spines and with long, lightly plumose setae; each seta extending outward for some distance before bending rather abruptly to create protective layer of horizontally-oriented setae around chela. Dactylus with

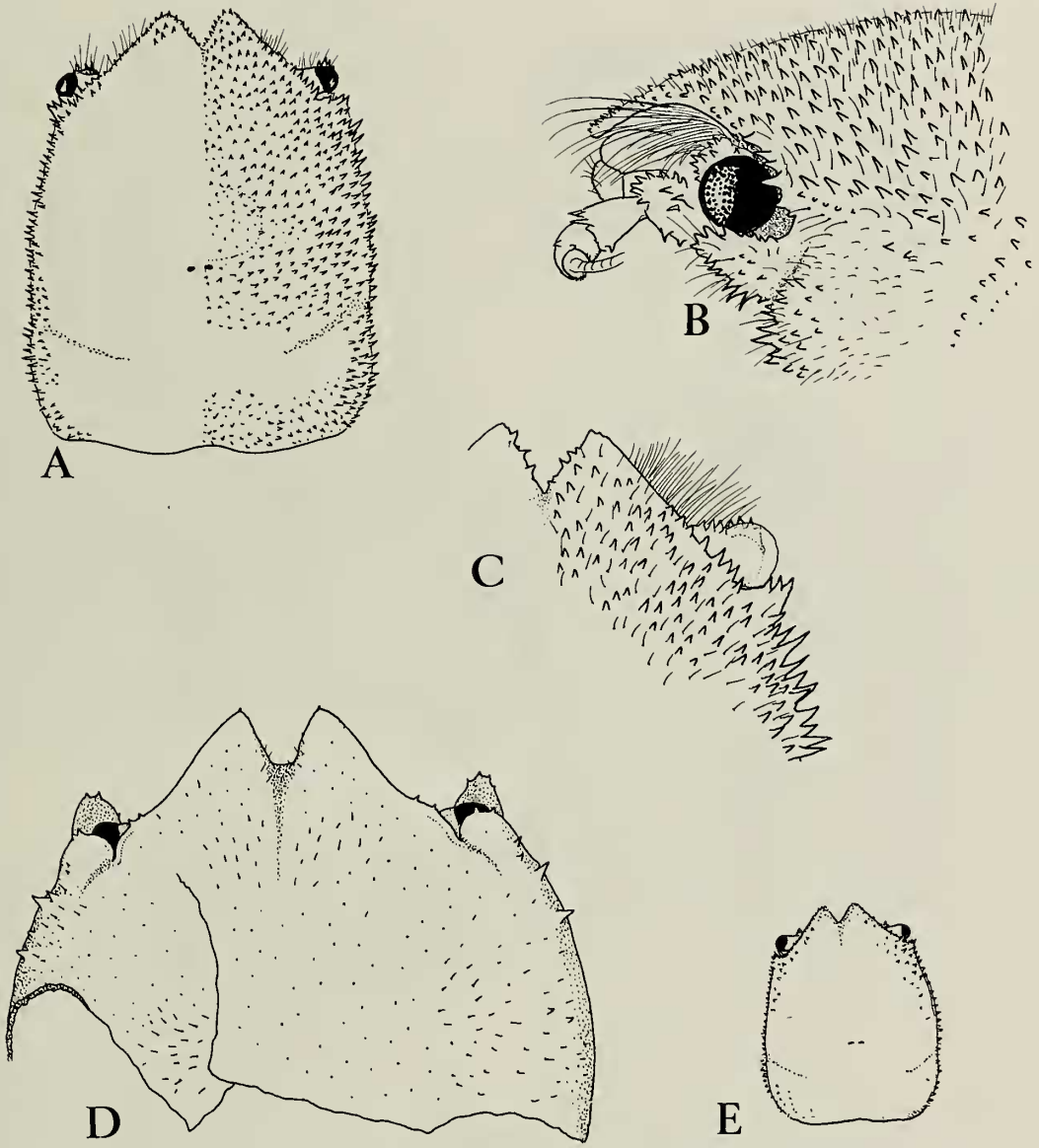


Fig. 1. *Dicranodromia spinosa*, new species, holotype male, USNM 68887. A, dorsal view of carapace, spination illustrated for right side only; B, lateral view of frontal region of carapace and orbit; C, higher magnification of anterior right side of carapace showing details of spination of postorbital tooth and carapace along lateral surface; D, anterior part of carapace of *Dicranodromia ovata* A. Milne Edwards, 1880, female holotype (MCZ 6510); E, dorsal view of holotype male of *Dicranodromia spinosa*, illustrated at same magnification as D for size comparison.

small basal tooth. Fixed finger with 4 rounded teeth, distalmost of which is bifid to allow insertion of opposing tip of dactylus (Fig. 2A). Tips of fingers bone white, glossy; hand light brown or tan, with color extending to

midpoint of dactylus and to approximately basal  $\frac{1}{4}$  of fixed finger. Pereiopods 2 and 3 (e.g., Fig. 2B) similarly spinose, covered with same lightly plumose setae seen on che-lipeds. Dactylus (Fig. 2C) stout, recurved,

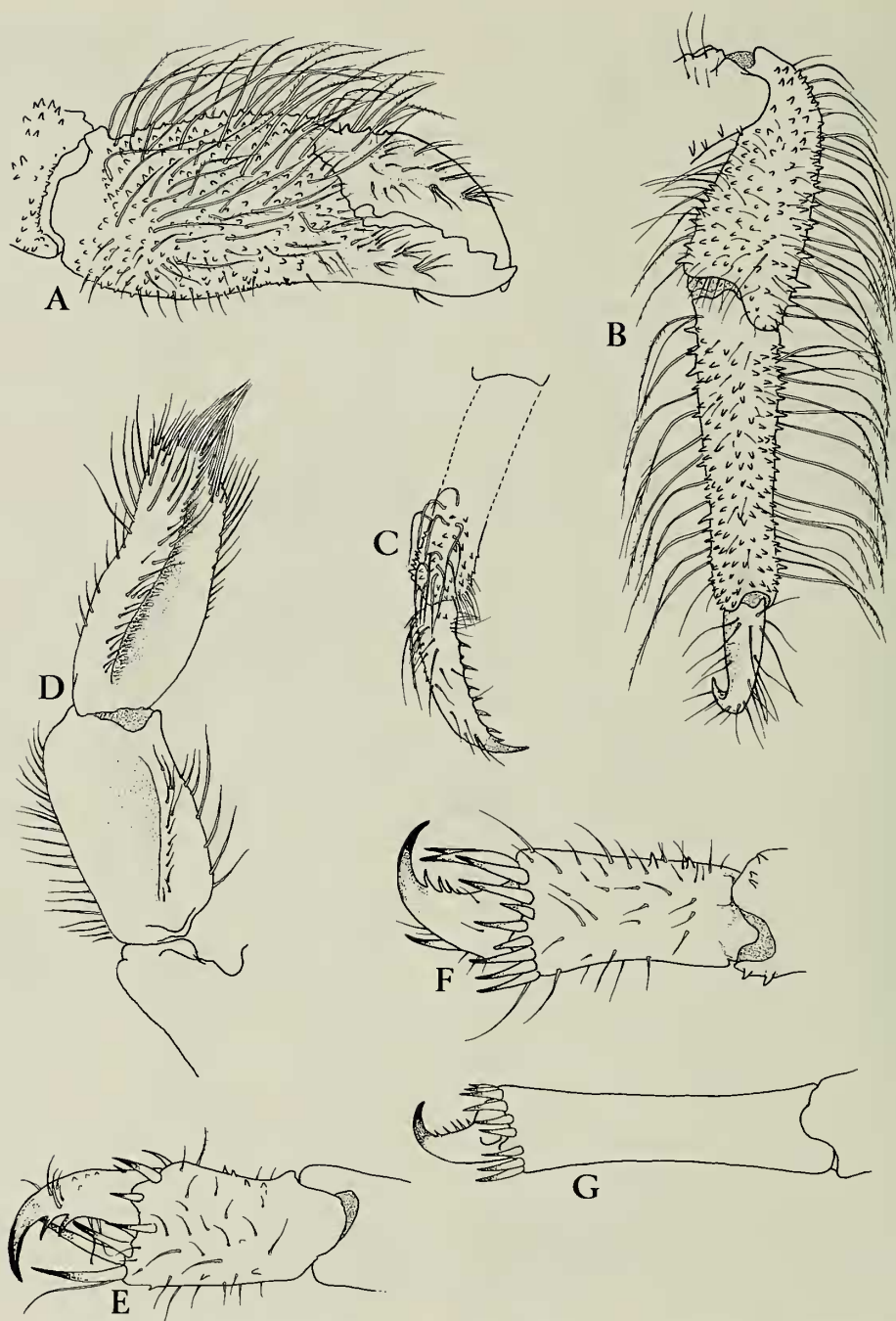


Fig. 2. *Dicranodromia spinosa*, new species: A, right chela, outer view; B, third pereiopod (second walking leg) [note orientation of dactylus to propodus and covering of spines and plumose setae]; C, same pereiopod as B, turned approximately 90° to show ventral margin of dactylus; D, first pleopod, right side, posteromesial view; E, dactylus and propodus of left fourth pereiopod; F, dactylus and propodus of left fifth pereiopod. *Dicranodromia ovata* A. Milne Edwards, 1880, female holotype (MCZ 6510): G, dactylus and propodus of fifth pereiopod (setation omitted) [note relative lengths of propodus and dactylus as compared to those in F].

with 6–7 sclerotized spines along ventral border. Pereiopods 4 (Fig. 2E) and 5 (Fig. 2F) short, stout. Dactylus of pereiopods 4 and 5 strong, recurved, distally sclerotized, with 3–4 teeth along former ventral border. Propodus of pereiopods 4 and 5 relatively short, clearly less than twice length of dactylus, and with distal circlet of strong, distally sclerotized spines; these spines more numerous, and more similarly sized, on pereiopod 5 (Fig. 2F). Male abdomen and telson spinose [not smooth as indicated in Rathbun's (1937) fig. 15], and without terminal setae shown in that illustration. Male first pleopod (Fig. 2D) two-jointed, heavy, with deep groove along most of length of distalmost article, which bears dense tuft of setae distally; entire pleopod more or less typical for the family (e.g., see Martin 1990, Báez & Martin 1989).

*Etymology.*—From the Latin “spina” (thorn) in reference to the rather dense covering of small spines on the carapace and pereiopods.

### Discussion

All four species of the genus *Dicranodromia* known to Rathbun (1937) were described prior to 1890; a fifth species of *Dicranodromia* was described 100 years later (Martin 1990). Only two of these species, *D. ovata* A. Milne Edwards and *D. felderi* Martin, were previously known from the western Atlantic. Recently, Guinot (1993) described two more species of *Dicranodromia*: *D. karubar*, from Indonesia, and *D. foersteri*, from the Chesterfield Islands.

*Dicranodromia spinosa* is rather easily separated from the other two western Atlantic species, *D. ovata* and *D. felderi*, by its relatively small size and by the spination and setation of the carapace and pereiopods. The largest specimen attributable to *D. spinosa* is but 10.1 mm total carapace length (the larger of two individuals in USNM 68862). In contrast, the holotype of *D. ovata* was originally measured as being 26 mm

(the holotype is in poor condition, making further measurements difficult; see Martin 1990), and *D. felderi* reaches a carapace length of 32 mm (Martin 1990).

The possibility that the new species consists merely of young or juvenile forms of either of the previously recognized species, with a loss of spination and setation as the crabs grow larger, was considered. It is true that the larger of the specimens listed here as *D. spinosa* have relatively smaller and fewer carapacial spines. However, the small (6.1 mm CL) holotype of *D. spinosa* is a mature male, as evidenced by the form of the first male pleopod (Fig. 2D). Additionally, several of the *D. spinosa* females are clearly mature, despite their size, with well developed pleopods bearing eggs in some cases, lending support to recognition of a small species as opposed to a series of juveniles. In contrast, one of the MCZ paratypes of *D. ovata* (MCZ 2745) (and the only MCZ paratype that is, in my estimation, truly *D. ovata*) is an immature female, the abdomen and pleopods not yet having their adult shape or setation, although the carapace length of that crab is 10.4 mm, larger than any specimen of *D. spinosa*. Finally, the relative lengths of the dactylus and propodus of the fifth pereiopod differ rather markedly between *D. spinosa* and either *D. ovata* (compare Fig. 2F to fifth pereiopod of *D. ovata* holotype, Fig. 2G) or *D. felderi* (see Martin 1990). An error exists in my 1990 paper, where the *fourth* pereiopod of the holotype female of *D. ovata* (Martin 1990: fig. 5f) was incorrectly referred to in the figure legend as the fifth pereiopod.

Although a decrease in overall spination of the carapace and pereiopods might be explained as an ontogenetic phenomenon, it is less likely that allometric changes in the relative lengths of pereiopod segments could be explained as normal ontogenetic changes.

Milne Edwards & Bouvier (1902) included text figures (their figs. 5 and 6) and plates (pl. 2 figs. 1–16; pl. 3 figs. 1–4), but it is difficult to determine which figures were

taken from which specimens, and their illustrations are too stylized to determine whether a given drawing is of *D. ovata* or *D. spinosa*.

In light of the morphological differences and nearly threefold size difference between specimens of *D. spinosa* and the holotype of *D. ovata* (MCZ 6510), it is somewhat surprising that Rathbun (1937) made no reference to morphological variation or to differences in life history parameters (i.e., maturation at a very small size). Indeed, in the type series alone, the difference in CL between mature specimens is more than fourfold (26 mm for the holotype, MCZ 6510, vs. 6.1 mm for MCZ 6511). Because Rathbun referred to several specimens of *D. spinosa* in her written description of *D. ovata* (e.g., Rathbun 1937:61, where she treated USNM 57069 [now a paratype of *D. spinosa*] as a mature female of *D. ovata*), it is clear that her description of *D. ovata* includes a conglomerate of characters of these two species, and is thus of very limited value in identification of species of *Dicranodromia*. The same is true for the excellent figures of Milne Edwards & Bouvier (1902: plate II, figs. 1–16), which included figures of the holotype as well as the paratypes, at least one of which is now attributable to *D. spinosa*.

In addition to the specimens described herein as *D. spinosa*, all of which were part of the series available to Rathbun, there are at least two more lots housed at the USNM currently labeled *D. ovata* but belonging to undescribed species (see Martin 1990).

It is interesting to note that all of the specimens I have herein referred to *D. spinosa* are from off Florida. Thus, not only are they morphologically different from true *D. ovata*, but they are rather far removed geographically as well, the holotype of *D. ovata* being from Barbados, and the MCZ 2745 paratype being from Guadeloupe, Lesser Antilles. Thus, as far as is presently known, *D. spinosa* is restricted to the Florida Keys, while *D. ovata*, much rarer than was pre-

viously believed, is known from only two specimens (possibly three; the paratype housed at the Muséum national d'Histoire naturelle, Paris, France [MNHN MP-B24324], from off Havana, Cuba, is damaged and can not with certainty be assigned to either species), and is known only from deeper waters (greater than 274 m) in the Lesser Antilles.

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### Literature Cited

- Báez R., P., & J. W. Martin. 1989. Crabs of the family Homolodromiidae, I. Description of the male of *Homolodromia robertsi* Garth, 1973, based on specimens from deep waters off the coast of Chile.—*Journal of Crustacean Biology* 9:492–500.
- Guinot, D. 1993. Données nouvelles sur les crabes primitifs (Crustacea Decapoda Brachyura Podotremata).—*Comptes Rendus de l'Académie des Sciences, Paris* 316:1225–1232.
- Martin, J. W. 1990. Crabs of the family Homolodromiidae, II. *Dicranodromia felderi*, new species, from the western Atlantic, with notes on the type series of *D. ovata* A. Milne Edwards, 1880.—*Journal of Crustacean Biology* 10:708–720.
- Milne Edwards, A. 1880. Études préliminaires sur les Crustacés, 1<sup>re</sup> partie. In Reports on the results of dredging under the supervision of Alexander Agassiz, in the Gulf of Mexico, and in the Caribbean Sea, 1877, '78, '79, by the U.S. Coast Survey Steamer "Blake," Lieut.-Commander C. D. Sigsbee, U.S.N., and Commander J. R. Bartlett, U.S.N., Commanding. Bulletin of the Museum of Comparative Zoology at Harvard College 8(1):1–68.
- , & E.-L. Bouvier. 1902. Les Dromiacés et Oxyostomes. In Reports on the results of dredg-

ing, under the supervision of Alexander Agassiz, in the Gulf of Mexico (1877-78), in the Caribbean Sea (1878-79), and along the Atlantic coast of the United States (1880), by the U.S. Coast Survey Steamer "Blake," Lieut.-Com. C. D. Sigsbee, U.S.N., and Commander J. R. Bartlett, U.S.N., Commanding, 39.—Memoirs of the Museum of Comparative Zoology at Harvard College 27(1):1-127.

Rathbun, M. J. 1937. The oxystomatous and allied crabs of America.—United States National Museum Bulletin 166:1-278.

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